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Cancer Risks for Thee, but Not for Me

By JERRY TAYLOR

In October, you may recall, the Journal of the National Cancer Institute caused quite a stir by publishing an epidemiological study suggesting that women who have abortions are 50% more likely to develop breast cancer than women who do not. The right-to-life crowd predictably seized upon the study as one more reason that abortion should be illegal—it causes cancer. "Not so fast," countered epidemiologists: a 9.5 risk ratio (as epidemiologists put it) "is not strong enough to call induced abortion a risk factor for breast cancer."

That statement by Eugenia Calle, director of analytic epidemiology for the American Cancer Society, is not some P.C. attempt to protect the reputation of abortion. It reflects the scientific consensus on what is and is not statistically significant when examining small groups of individuals for analytic purposes.

"Epidemiological studies in general are probably not able, realistically, to identify with any confidence any relative risks lower than 1.3," Dr. Calle noted. Since epidemiologists normally take seriously only risk factors of 2.0 or greater, Lynn Rosenberg of the Boston University School of Medicine agreed with most scientists that the breast cancer study was "far from conclusive, and it is difficult to see how [it] will be informative to the public."

So those of us who choose to have abortions are safe from paternal regulation for the time being. Those of us who choose to have a cigarette, however, aren't so lucky. The same risk ratio that was so widely poo-pooed by scientists as insignificant and inconclusive when it comes to abortion was deemed by the very same scientists an intolerable health menace when it comes to secondhand smoke. Actually, that's not quite true. The 1.3 risk factor for a single

abortion was significantly greater than the really hard to detect 1.19 risk ratio for intensive, 40-year, day-in-day-out pack-a-day exposure to secondhand smoke (as figured by the EPA).

And that's just the beginning. The EPA refused to regulate electromagnetic fields emanating from power sources (alleged by some to pose a cancer risk) because, according to the agency, "the relationship risks in the published reports have seldom exceeded 3.0." Similarly, some studies have found that drinking pasteurized milk results in a 2.1 risk factor for lung cancer. No one, however, has gotten overworked about the evils of the death-dealing dairy industry (save, perhaps, for Colman McCarthy and Jeremy Rifkin, but that's another story).

So what gives? Perhaps the medical community is simply no less cynical than the political community. Yale epidemiologist Alvan Feinstein related in *Toxicological Pathology* that he recently heard a prominent epidemiologist admit that the EPA's secondhand smoke study and corresponding public campaign were "rotten science, but it's a worthy cause. It will help us to get rid of cigarettes and to become a smoke-free society."

Or perhaps it is simple but honest subconscious bias. A study by George Carlo et al., published in the *Journal Risk Analysis*, surveyed 1,461 epidemiologists, toxicologists, physicians and general scientists on various health risks, including secondhand smoke. Half of those surveyed were read a vignette designed to reflect mainstream scientific thinking on secondhand smoke: 70% of those individuals thought it a serious environmental health hazard and 85% felt that public health intervention was indeed necessary.

The second group surveyed was read

the same vignette but, instead of being told that the facts related to secondhand smoke, it was told the discussion pertained to "substance x." Only 33% of those scientists and physicians thought that substance (in reality, secondhand smoke) a serious health hazard, and only 41% felt that "substance x" warranted public health regulation.

An antismoking activist might argue, however, that the lack of action against one particular set of risks does not justify lack of action against others. Perhaps the government should regulate pasteurized milk, limit exposure to electric fields, and ban abortion as a cancer risk. Yet what's missing here is any appreciation of the difficulty of assuming that correlation necessarily equals causation or any understanding of statistical probabilities.

For example, we know that diet and exercise are the most important contributing factors for cancer. And we also know that smokers on average get far less nutrition and exercise than nonsmokers. Are nonsmoking wives of smokers (the population subgroup examined by EPA to arrive at their 1.19 risk ratio for secondhand smoke) more or less likely to share their husbands' lifestyles and dietary patterns?

Ragnar Rylander of the University of Gtthenburg wrote recently in the *Archives of Environmental Health* that "social factors were three to four times more important [risk factors] than BTS [environmental tobacco smoke] exposure." He noted that "there is increasing evidence that dietary habits are related to several kinds of respiratory disease, including lung cancer and chronic bronchitis," and those dietary habits of smoking men are often shared by their nonsmoking spouses. Dr. Rylander asked: "Could it be that we are committing a funda-

mental error by placing BTS in the category of a causative factor when in reality we may be studying a co-founder?"

Correlation simply does not equal causation, no matter how impressive the statistics. Consider an epidemiological study published in Holland that found that keeping birds correlates with a sevenfold increase in the risk of lung cancer—a correlation three times more significant than that of secondhand smoke. Similarly, biochemist Bruce Ames of the University of California at Berkeley is fond of showing his students a graph with two lines representing data from 1959 to the present. The two lines almost completely match. The students invariably say yes, the two sets of data must be related. Yet one line represents the number of mailing clerks in Germany; the other, the number of live childbirths.

And then there is the messy problem (for epidemiologists) of sheer randomness. If one flips a coin 50 times, it's unlikely that the results will be evenly split between heads and tails. If Jefferson shows up on top of the nickel 19% more often than does Monticello, this tells us nothing. Now consider that more than half of the epidemiological studies on secondhand smoke included 40 or fewer subjects, and seldom did risk ratios differ much from the above example. Some studies, in fact, showed negative correlations—that being exposed to secondhand smoke actually reduces the risk of lung cancer.

James Le Fanu warned in London's *Sunday Telegraph* a few years back that "we could reach a situation where health activists, using dubious scientific evidence, will be in a position to blackmail us into behaving the way they think we should. It is not an attractive prospect." Well, Dr. Fanu, the future is now.

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